DEPARTMENT OF THE INTERIOR

Hon. Charles Stewart, Minister

W. W. Cory, C.M.G., Deputy Minister

NORTH WEST TERRITORIES AND YUKON BRANCH

O. S. Finnie, Director

PUB

CANADA'S WILD BUFFALO

OBSERVATIONS IN THE

WOOD BUFFALO PARK

1922



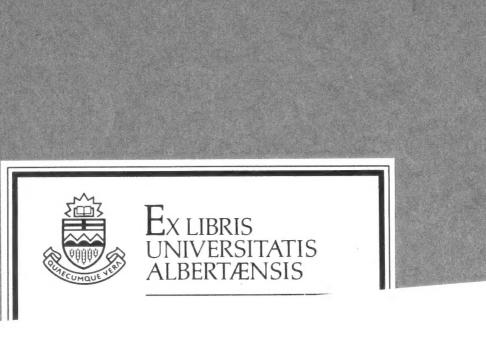
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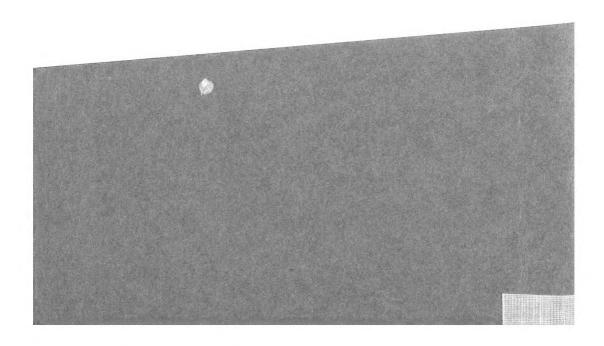
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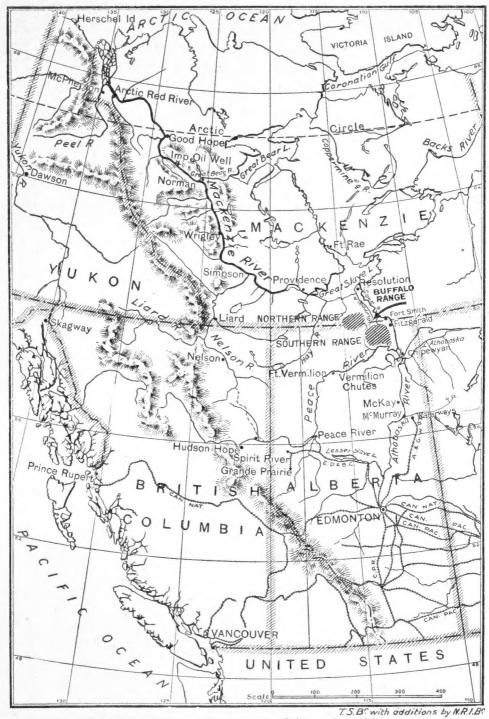
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Ottawa
1923

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This park comprises the only known habitat of wood bison.

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HON. CHARLES STEWART, Minister W. W. CORY, C.M.G., Deputy Minister
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OBSERVATIONS IN THE WOOD BUFFALO PARK

By MAXWELL GRAHAM

WITH AN APPENDIX A RECONNAISSANCE IN THE HOME OF THE WOOD BUFFALO

By F. V. SEIBERT, B.A.Sc., D.L.S., M.E.I.C.



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CANADA'S WILD BUFFALO

By MAXWELL GRAHAM

THE BUFFALO HABITAT

For the purposes of this article it may be stated that the last wild buffalo inhabit a district lying south and west of the settlement of Fort Smith in the North West Territories. The range is bounded on the east by the Slave river, on the south by the Peace, and on the west by the Jackfish, from a point a few miles south of the 60th parallel of latitude to its outlet into the Peace river. This heavily forested area is interspersed with open park-like meadows and many muskegs, sloughs, and lakes. Poplar and jack pine ridges alternate, the former carrying native grasses and other herbage such as peavine, which is greatly relished by the buffalo.

There are many muskegs in the valleys in which grow the coarse grasses that form the staple food of the buffalo in winter. They shovel the snow away with their muzzles and eat the still green grass near the roots. They also browse to some extent, as did the European wood buffalo. It is stated on good authority that, in the spring, when patches of caribou moss appear through the melting snow the buffalo eat this moss which contains high food values.

An enormous amount of gypsum underlies the greater part of the range. Most of the drainage is underground and the water carries off gypsum in solution. This causes subsidence of the ground with the result that the range is covered with pot holes which vary, in depth from a few feet to over sixty feet, and in width from three to three hundred. Some of these pot holes were formed while the writer was present on the range and pictures of them were taken. On one occasion the fresh wallow of a large buffalo was noted and the imprint of the hump was broken by the lip of a new pot hole, the earth beside the buffalo having apparently subsided while the animal was in the act of wallowing. The footprints showed that, when the animal rose its foreleg had punched holes on the edge of the new crater. It must have come within an ace of falling into a pit some thirty feet deep with almost perpendicular sides. The skeletons of buffalo are occasionally found in such holes. The range is one selected from time immemorial by the buffalo themselves and contains ideal natural shelter and forage suited to their requirements at every season of the year. In addition to the necessary forage there are within the range ample salt licks containing saline earths sufficient for years to come. At one point in the northern portion of the southern range an area of about one hundred acres had been scuffed up by the buffalo as if it had been ploughed. Salt crystals were seen everywhere and there were patches of vegetation resembling the tops of small onion plants and tasting somewhat like parsley.

BUFFALO OR BISON

Premising what follows it should be noted that a true buffalo is an animal with no hump on its shoulders. It is found only in Africa and Asia. Our animal, having a high hump, is really a bison, but, as Doctor W. T. Hornaday, Director of the New York Zoological Park, has stated, inasmuch as it is known to over one hundred million people on this continent as the buffalo, it would be quite useless to attempt to bring about a universal change in its popular name.

The now almost extinct European buffalo was a forest species, while the so-called American buffalo, which to-day is only to be found in our parks and zoological collections, is descended from a race that lived on the plains and differed from the true bison of Europe in having more abundant hair, relatively weaker hindquarters and shorter and more curved horns. The last remnants of true bison in Europe have supposedly been exterminated by the Bolshevists. Canada, however, in the northern wood buffalo possesses not only finer specimens than those which ranged in the Caucasus but also larger, darker and handsomer animals than those which were formerly found in such numbers on the plains far to the south.

Owing to this difference in appearance our wood buffalo has been classified as a sub-species of the American bison and is referred to as Bos (Bison) Bison Athabascae, but whatever differences there are between it and the buffalo of

the plains are largely owing to environment.



Wood Buffalo.

From time immemorial until the middle of the last century buffalo ranged areas covering fully one-third of the entire continent of North America in numbers far exceeding those of any other large mammal of recent times. To-day, outside of those in parks, no wild buffalo exist in the world excepting those whose range was inspected in the summer of 1922.

During numerous journeys on horseback and on foot, the writer saw a total by actual count of 114 buffalo. He succeeded in getting within fifty feet of several of them and was able to take many photographs. This success in approaching the animals permitted a close study of them to be made.

Many animals were seen near Salt river crossing. Before reaching this spot one huge bull was located lying down in a wallow but he winded the party and got away before a picture could be taken. A little later on the same day a herd of sixteen buffalo were seen in an open muskeg and pictures of them were secured. Half an hour later another herd of about the same size came out of the forest and photographs were again obtained. A position was then taken up close to the place where these herds had emerged from the wood and in a short time more buffalo came through the bush and stood close at hand gazing out at the muskeg from the fringe of the forest. There appeared to be nine in this herd, one immense bull, two cows, two two-year-olds, three yearlings and one very small calf whose coat was a faint yellowish colour. Two pictures were taken of these and, the wind being favourable, an attempt was made to follow them into a dense growth of willows. Piglike grunting noises were heard but nothing could be seen owing to the thick underbrush. On the return trip

to camp the same day two big bulls were seen and a herd of sixteen buffalo were found at a wallow. This herd, consisting of two dark coloured calves, several cows and some two-year-olds, besides the usual large bull, formed in two ranks facing the cameras, bulls in front, cows and young stock behind, but soon the leader moved off to the right, the others following him. The last one, however, took a final roll before joining the rest.

The wild wood buffalo has a very keen sense of smell. If the wind is favourable they can instantly scent a man, and, providing no rain has fallen, they can smell a human trail two days old. Their eyesight is not good. When the wind is favourable it is possible for a man to stand unconcealed within fifty feet, or less, of the buffalo. As long as he does not move they will not see him. When once they smell or see a man these huge animals move with remarkable rapidity.

TRAILS AND WALLOWS

The buffalo wallows are generally found on sandy jack pine ridges. They often cover several acres and comprise shallow depressions made by the buffalo rolling in the sand when taking a sand bath. Many of the trees in and around such places are rubbed smooth, especially the rough-barked jack pine. During



Muskeg and bush in background typical of Fort Smith district.

the fly season the skin around the base of the horns gets itchy and the buffalo, in gaining relief, rub the bark off the trees to a height, by measurement, of six and a half feet above the ground.

Just as on the plains, where highways and railways have followed old buffalo trails as the best route from point to point, so in the wood buffalo habitat, the trails made by the buffalo are the most direct and best located routes to follow when travelling through the range. They are the easiest and shortest way through forest and muskeg and between the heads of rivers. The buffalo trails are used by the Indians. At small expense they can be made into first-class pack trails and some of them have already been converted to that use. It was principally on buffalo trails that the journeys of the party were made last summer.

From the number of young stock seen, from the fact that old trails and old wallows are being reopened and new ones made and from other evidence investigated it is evident that the wood buffalo are increasing in numbers and that those in the southern range may be conservatively estimated at one thousand, while those in the northern may be put down as five hundred.

THE PROTECTIVE PATROL

A considerable part of the work last summer consisted of a thorough reorganization of the buffalo patrol service. This warden or ranger force consisted last year of only three men. Investigation showed that these wardens were doing excellent work, but, to cover the territory in which the buffalo range it was necessary to increase their numbers. Great care was taken in the selection of suitable men. A good ranger must possess knowledge of the Athabaska district, be thoroughly woods-wise, and able to take care of himself in an emer-



Bark scored off a jack pine tree by buffalo .

61 ft. from ground.



Bear claw marks on a poplar tree.

gency. A knowledge of dogs for sleigh purposes in winter, and of horses for pack and saddle purposes in summer is called for. All these requisites have been met, and all the men selected, with one exception, are returned soldiers. The one exception was rejected for military service on account of some minor deformity. This does not affect his usefulness as a carpenter or his skill as a warden in the patrol service.

Each ranger, or warden, lives in a cabin, which the rangers themselves build. Some of the cabins erected in the past at unsuitable points or being as

cabins unsuitable, have been condemned. New ones have been, and are being, erected by warden labour at selected points. Each ranger has his own patrol area clearly defined and his duties definitely laid down. A chief ranger of many years' experience visits every cabin once each month, which means a trip by dog team in winter of about three hundred miles. Now that a larger force of rangers, supplied with sufficient equipment, has been secured, the protection of the buffalo will be much improved.

Increased protection has become necessary from a variety of causes. Formerly only Indians molested the buffalo. Of late years the Treaty Indians in and around Fort Smith have become more amenable and have not harassed



Warden's Camp at Pine Lake, Centre of Range.

the animals to any extent. Half-breeds and Indians from other districts, however, are still a menace, as also are some of the white trappers, many of whom are foreigners with no respect for law.

DANGERS TO BE GUARDED AGAINST

On instructions from Ottawa an inquiry was prosecuted into the unlawful killing of two buffalo last winter. One of the men implicated, a white man, escaped to the United States, but the other, a Chipewyan half-breed, was brought to trial at Fitzgerald and a conviction, carrying three hundred dollars and costs, was secured against him. The publicity given to this trial, through the number of Indians and others in attendance, should act as an excellent deterrent to future would-be violators of the game laws. Owing to the growing scarcity in the Fort Smith district of such large game animals as moose and caribou the buffalo are in greater danger than in the past. Many of the animals weigh over a ton and some weigh at least two thousand five hundred pounds. In seasons of scarcity they would be a great temptation to anyone needing meat and, when approached up the wind, buffalo can be easily shot.

There are other dangers that menace the buffalo. The first of these is the presence in the range of inexperienced outsiders looking for easy money by trapping muskrats. Apart from ruthless trapping, shooting, and even poisoning of fur-bearers in the reserve, the kind of trappers referred to would soon drive

away the buffalo from the winter haunts selected by them and such molestation would probably end by driving the buffalo completely out of the range, where at present special protection is afforded them.

A bad forest fire is the second danger menacing the buffalo. There were no fires in the reserve last season, but fires coming in a time of drought, and fanned by high winds would have a disastrous effect on the range and seriously

deplete the grazing areas.

The third menace is the wolf. The tracks of four wolves were seen by the writer during the latter portion of his stay in the buffalo range. In one case wolf signs, where wool was present, showed that their victim was a buffalo, and in another case the presence of hairs showed that the victim was a moose. The wolf is the hardest of animals to trap and the only wolves shot are those which are occasionally encountered on the trail. The question of wolves and their destruction is a large subject and one that requires very careful consideration.

The limits of this paper will not permit more than a passing reference to wild life conditions in the great buffalo reserve, but it may be stated that with the exception of fox and beaver all fur-bearers in that area are growing scarcer. Steps have now been taken to protect the buffalo and other valuable forms of

wild life on the buffalo range.

FINEST SPECIMENS OF THE SPECIES

There are many reasons why the wood buffalo in northern Alberta and the North West Territories should be preserved. They are the last of their species living to-day under absolutely free and wild conditions. They are the finest specimens of their species, superior in pelage, size, and vigour to those of the plains.

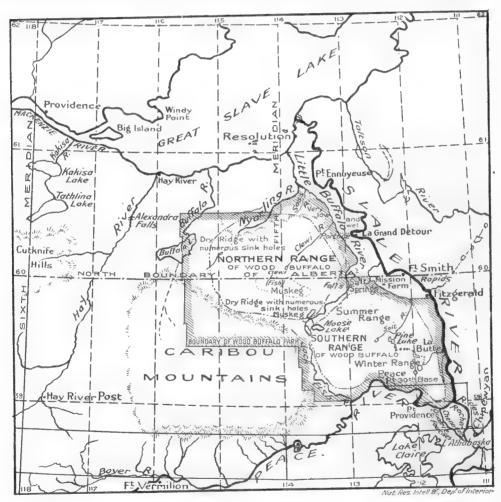
The time is approaching when an infusion of new unrelated blood will be needed by our herds in the National parks, and it is only from the northern herds that such infusion can be obtained. Looking to the future success of the experimental cross-breeding between buffalo and domestic bovines, it is imperative that a reserve stock of pure blood bison of the highest potency should be kept in reserve, so that the ultimate fixed type of new range animal may continue to pass on to successive generations the prepotent qualities of the true bison, hardiness, thriftiness, a valuable robe and first-class beef qualities.

APPENDIX

A RECONNAISSANCE IN THE HOME OF THE WOOD BUFFALO

By F. V. Seibert, B.A.Sc., D.L.S., M.E.I.C.

That portion of the North West Territories and of Alberta contiguous to the 60th parallel of latitude, in the vicinity of Fort Smith on the Slave river, is of particular interest to the naturalist and by reason of its economic value to the Dominion Government. In this region to-day are found the only remnants,



The wood buffalo park was created by Order in Council of December 18, 1922. The boundaries of this park are shown on the above sketch map and include the present habitat of the wood buffalo.

in a wild state, of the millions of buffalo which at one time roamed throughout the great central plains of North America from the Mexican border to the

country north of the Great Slave lake.

In order to carry out the protective measures of the Dominion Government in this region, to determine the boundaries of the habitat of the wood buffalo, and to secure a general idea of the resources of the district, explorations of that area lying immediately west of the Slave river extending as far west as the Caribou mountains, Buffalo lake and Big Buffalo river were made by the writer, a member of the National Resources Intelligence Service, on behalf of the North West Territories and Yukon Branch. A synopsis of his report to the director of the branch is given below.

THE RANGES

The ranges of the buffalo are two in number and known as the "northern" and the "southern." Both lie west of the Slave river and are separated by the upper reaches of the Little Buffalo and Salt rivers. The northern range is bounded on the north by the Nyarling river and its north branch; on the east by the Little Buffalo river; on the south by the upper reaches of this river and the Caribou mountains, and on the west by Buffalo lake. The range is further sub-divided into summer and winter feeding grounds, which is also the case with the southern range, except that the winter and summer grounds of the latter are more closely associated.

THE NORTHERN RANGE

The northern range presents greatly varying physical aspects; immense grassy marshes with narrow strips of spruce and muskeg; rolling country; ridges covered with scrub poplar, spruce, and jack pine, a good deal of it fire-scorched;



Drift wood in the Nyarling River.

plateau of limestone overlying beds of gypsum and the surface of the plateau covered largely with sand and broken up by numerous pot-holes varying in depth from six to one hundred feet, extending in some cases over two or

three acres of ground. The plateau surface is further covered almost entirely with jack pine, scrub, white poplar and a very sparse growth of grass. In the valley below are willow trees, white and black poplar and a luxuriant growth of grass, peavine and vetch. The water is largely brackish. The valley of the Nyarling river, with its abundant growth of vegetation is the main summer

range of the wood buffalo in this region.

The Nyarling river (the name signifies "underground") is one of the curious geographic features of this region. It drains through the plateau referred to above by an underground channel. The upper end of this channel is marked by a small lake and a number of ponds in which the water sinks into the ground. At its lower end the water finds the surface again in the form of small muskeg lakes. This watercourse beneath the surface can be distinctly traced all the way across the ridge for a distance of about ten miles, in the form of a well-defined dry valley varying in depth from fifty to one hundred feet. The underground channel has evidently so worn out its course that the overlying strata of limestone have fallen in. This happened so long ago that the strata are seldom evident. In most places the surface is covered with a dense growth of vegetation.

THE SOUTHERN RANGE

The southern range comprises the country enclosed by the upper reaches of the Little Buffalo river, the Salt, Slave, Peace and Jackfish rivers, and lies wholly in the province of Alberta. This district is a flat or gently undulating



Salt Springs, West of Fort Smith, N.W.T.

plain, having an elevation of from 750 to 900 feet above the sea. Starting at the Peace river, at an elevation of from 20 to 70 feet above the level of that river, it maintains a fairly uniform elevation, dropping at the north sharply away in an escarpment of 150 to 200 feet down to the broad level plain of the lower Slave river. There exist numerous ridges of sand, boulders and limestone with abundant sink-holes due to the solution of the beds of gypsum which underlie the surface. In the south there are a number of lakes all of which are of fresh water, while in the north there are very few, most of these being very small and many containing water too alkaline to drink. There are a few streams through-

out the range but not nearly as much surface drainage as the extent of the area would lead one to expect. A great part of the drainage must be underground, possibly through the gypsum strata. The southern portion contains much muskeg, and many large, grassy sloughs with low sandy jack pine and spruce ridges. These sloughs are the main winter teeding grounds for the buffalo in this range. A particularly choice piece of country is located along the Peace river in the vieinty of Peace Point, but its extent is very limited, being only a few miles in width

The northern portion of the range contains very little muskeg and is mostly very dry. In this part of the range, sink-holes are more numerous and cover a much larger area than they do in the south. In the southern range during the summer, most of the buffalo roam in the area between the Salt river and the Little Buffalo river as far north as the escarpment at the Salt Springs. This area is well timbered with poplar, jack pine, and spruce, interspersed at intervals with irregular patches of prairie, usually not greater than twenty or thirty acres in extent. Grass grows very abundantly not only in the openings but throughout the bush as well. There is very little muskeg. Most of the area is



Buffalo lying down in wallow.

high and dry and a large part of it pitted with sink-holes showing sub-surface drainage. Water though not abundant can be found in sufficient quantities in the form of pools and springs. The physical characteristic which attracts the buffalo is the large number of grassy sloughs. A number of springs carry salt in solution, thus ensuring a supply of this material for the summer season. There is very little agricultural land in either of the buffalo ranges. The grassy sloughs and low-lying ground have little opportunity for drainage and the high land is mostly sandy and so broken up by sink-holes as to be useless for agricultural purposes.

TRAILS

One of the characteristic features of the ranges is the network of buffalo trails that extend in every direction throughout the country. These are usually about one foot in depth and unlike the trails made by domestic cattle and horses take the most direct route along high, dry land and have few of the local bends common to other trails. They always start at something definite, such as a drinking place or feeding ground, and end at something definite. Swampy areas and streams are crossed at the narrowest points or the best places for fording. The buffalo will follow one general direction and maintain that for miles unless diverted because of some serious obstacle. For example, one trail running east and west in a summer feeding ground of the southern range runs for a distance of thirty miles across the range. At some places this route is marked by nine to twelve trails covering a distance of not more than 75 feet in width. At one of the larger semi-open areas, where animals scatter more or less to feed, these trails become somewhat diffused but only for a few miles and then appear as prominent as ever on the other side.

WALLOWS

Next to the trail, the wallow, in which the buffalo delights to roll and occasionally rest, is the most noteworthy feature of the range. The areas containing these wallows vary from one to six acres in size and are made by the removal of all surface material, including sticks, roots, leaves, and sod. All the trees except the large ones have been obliterated. Those that remain show rubbing on the bark by the buffalo, frequently as high as $6\frac{1}{2}$ feet. Jack pine and spruce are the species most commonly peeled in this way. These trees are generally near the larger wallows and along the main trails. The soil in the wallows is usually sand or sandy loam but occasionally it is the hardest clay.

The sketch maps on pages 2 and 13 give the location of the buffalo ranges in reference to territorial boundaries and the size and situation of the area which has been set aside as a wood buffalo park for the better protection of these animals. The pictures give an idea of the general character of the range.

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Description of areas which are withdrawn from hunting and trapping except for native Indians, Eskimo and Half-breeds.

PEEL RIVER PRESERVE

Comprising all that tract of land which may be described as follows:-Commencing at the intersection of the sixty-sixth (66) parallel of north latitude with the boundary between the North West Territories and the Yukon Territory; thence northerly and westerly, following the said boundary to its intersection with Peel river; thence northerly following the right bank of Peel river to its confluence with Mackenzie river; thence easterly and southerly, following the left bank of Mackenzie river to Arctic Red river; thence southerly following the left bank of Arctic Red river to its intersection with the sixty-sixth (66) parallel of north latitude; thence westerly following the sixty-sixth (66) parallel of north latitude to point of com-

YELLOWKNIFE PRESERVE

Comprising all that tract of land which may be described as follows:-Commencing at the point on the north arm of Great Slave lake where the left bank of Marian river intersects the said north arm; thence northerly following the left bank of Marian river to the confluence of that river with River la Martre; thence westerly following the left bank of River la Martre to lac la Martre; thence westerly following the north bank of lac la Martre to the stream flowing into lac la Martre from Lake Grandin; thence northerly following the left bank of the said stream to Lake Grandin; thence northerly following the easterly banks of Lakes Grandin, Tache and Ste. Therese and the connecting waters and portages thereof to McVicar bay of Great Bear lake; thence to the right following the easterly shore of Great Bear lake to the outlet of Dease river; thence northeasterly following the left bank of Dease river and the connecting portage to Dismal lakes; thence easterly following the southerly bank of Dismal lakes and the right bank of Kendall river to the confluence of Kendall river with Coppermine river; thence southerly, following the left bank of Coppermine river to lac de Gras; thence easterly following the southerly bank of lac de Gras to its intersection with the one hundred and eleventh (111) degree of west longitude; thence southerly following the one hundred and eleventh (111) degree of west longitude to Lake Mackay; thence westerly, southerly and easterly, following the bank of Lake Mackay to the connecting waters with Lake Aylmer; thence easterly, following the southerly bank of the said connecting waters to Lake Aylmer; thence easterly and southerly following the westerly and southerly banks of Lake Aylmer and Clinton-Colden lake to Artillery lake; thence southerly following the westerly bank of Artillery lake to Lockhart river; thence westerly following the right bank of Lockhart river to its outlet into Great Slave lake; thence westerly following the northerly shore of Great Slave lake to the point of commencement.

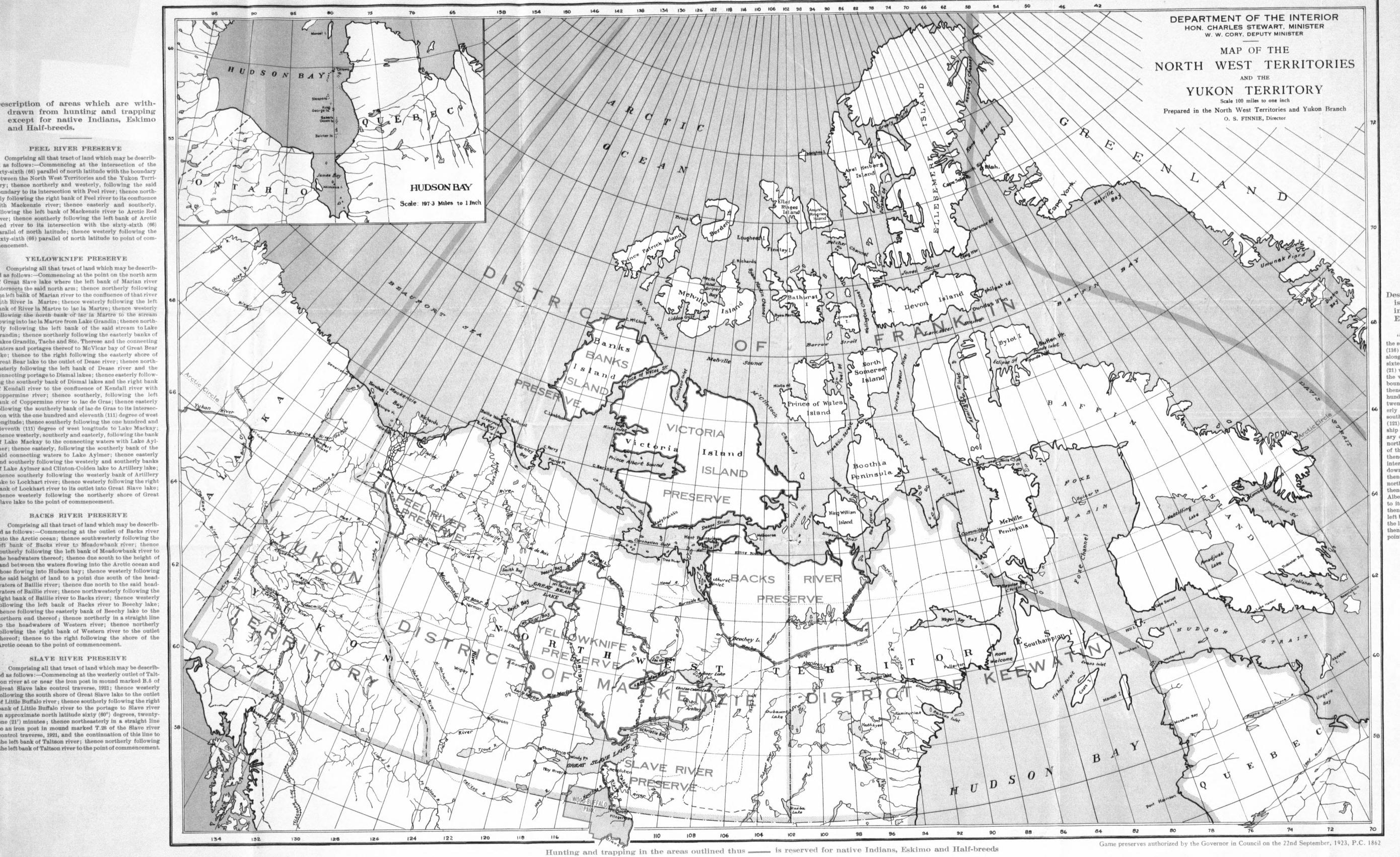
BACKS RIVER PRESERVE

Comprising all that tract of land which may be described as follows:-Commencing at the outlet of Backs river into the Arctic ocean; thence southwesterly following the left bank of Backs river to Meadowbank river; thence southerly following the left bank of Meadowbank river to headwaters thereof: thence due south to the height land between the waters flowing into the Arctic ocean and those flowing into Hudson bay; thence westerly following the said height of land to a point due south of the headwaters of Baillie river; thence due north to the said headwaters of Baillie river; thence northwesterly following the right bank of Baillie river to Backs river; thence westerly following the left bank of Backs river to Beechy lake: thence following the easterly bank of Beechy lake to the northern end thereof; thence northerly in a straight line to the headwaters of Western river; thence northerly following the right bank of Western river to the outlet thereof; thence to the right following the shore of the

SLAVE RIVER PRESERVE

Arctic ocean to the point of commencement.

Comprising all that tract of land which may be described as follows: - Commencing at the westerly outlet of Taltson river at or near the iron post in mound marked B.5 of Great Slave lake control traverse, 1921; thence westerly following the south shore of Great Slave lake to the outlet of Little Buffalo river; thence southerly following the right bank of Little Buffalo river to the portage to Slave river in approximate north latitude sixty (60°) degrees, twentyone (21') minutes; thence northeasterly in a straight line to an iron post in mound marked T.28 of the Slave river ontrol traverse, 1921, and the continuation of this line to he left bank of Taltson river; thence northerly following



Description of Wood Buffalo Park which is withdrawn from hunting and trapping except for native Indians and Eskimo.

"Commencing at the most westerly intersection of the south boundary of township one hundred and sixteen (116) and the left bank of Peace river, thence westerly along the south boundary of township one hundred and sixteen (116) to the west boundary of range twenty-one (21) west of the fourth meridian; thence northerly along the west boundary of range twenty-one (21) to the south boundary of township one hundred and seventeen (117); thence westerly along the south boundary of township one hundred and seventeen (117) to the west boundary of range twenty-two (22) west of the fourth meridian; thence northerly along west boundary of range twenty-two (22) to the south boundary of township one hundred and twenty-one (121); thence westerly along the south boundary of township one hundred and twenty-one (121) to the west boundary of range nine (9) west of the fifth meridian; thence northerly along the west boundary of range nine (9) west of the fifth meridian to the thirty-fourth (34) base line; thence easterly along the thirty-fourth (34) base line to its intersection with Nyarling river; thence northeasterly down stream along Nyarling river to Little Buffalo river; thence southerly along the Little Buffalo river to the north boundary of the Province of Alberta, latitude 60°; thence easterly along north boundary of the Province of Alberta to Salt river; thence up stream along Salt river to its intersection with the thirty-second (32) base line; thence easterly along the thirty-second (32) base line to the left bank of Slave river; thence southerly up stream along the left bank of Slave river to the left bank of Peace river; thence up stream along the left bank of Peace river to the point of commencement.'

AREAS

Banks Island Preserve 3,300 Peel River Preserve...... . 70,000 Yellowknife Preserve...... Slave River Preserve 65,500 Backs River Preserve.....241,800 Sq. Miles



